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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,658	09/29/2004	David E. Henderson	PES-0218	5657

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EXAMINER	
WILLS, MONIQUE M	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/711,658	HENDERSON ET AL.	
	Examiner	Art Unit	
	Monique M. Wills	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/28/06,3/15/06 & 9/29/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements filed March 15, 2006, June 28, 2006 & September 29, 2004 has/have been received and complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. Accordingly, the information disclosure statement(s) is/are being considered by the examiner, and an initial copied is attached herewith.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 & 8-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Cavalca et al. U.S. Patent 6,287,717.

With respect to **claims 1 & 3**, Cavalca et al. teach a membrane-electrode-assembly (MEA) for an electrochemical cell employing a gas (col. 6, lines 25-35), the MEA comprises: a proton exchange membrane (col. 13, lines 40-55); a first electrode disposed on one side of the membrane (col. 5, lines 20-35); a second electrode disposed on the opposite side of the membrane (col. 5, lines 20-25); and a metallic

layer disposed between the membrane and the first or second electrode (col. 14, lines 40-65). The limitations with respect to the metallic layer having a composition and thickness suitable for reducing the amount of gas crossover at the membrane by equal to or greater than about 20% as compared to the amount of gas crossover at the membrane in the absence of the metallic layer, are considered inherent characteristics of the prior art set forth, because Cavalca teaches a platinum catalyst coating with the same thickness and composition set forth by Applicant. See Example 1. Furthermore, the membrane and active area coverage are identical to Applicant, thereby forming the same gas crossover characteristics. See Example 1.

With respect to **claim 2**, the gas comprises hydrogen (col. 6, lines 30-35).

As to **claim 4**, the metallic layer is platinum. See Example 1.

With respect to **claims 8 & 9**, the metallic layer defines the active area of the membrane. See Example 1. Therefore, the metallic layer covers 100% of the active area of the membrane.

With respect to **claim 10**, the metallic layer is deposited on the surface of the membrane. See Example 1.

With respect to **claim 11**, the limitation concerning how the metallic layer is deposited on the membrane is a method limitation incorporated into a product claim. When a method limitation is incorporated into a product claim, the method limitation does not patentably distinguish the product, because what is given patentable consideration is the product itself and not the manner in which the product was made. Therefore, the limitation is satisfied, as the referenced structure is identical to

Applicant. Although patentability of the product is independent of how it is made, Cavalca teaches coating the membrane by ion bean assisted deposition (col. 28, lines 5-8). Furthermore, in accordance with MPEP 2112.02, "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

With respect to **claims 12-13**, the metallic layer thickness is 475 angstroms, embracing a thickness greater than 1 micro-inch (claim 13) or molecule of material (claim 12).

Therefore, Cavalca anticipates the instant claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-6, 7 & 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cavalca et al. U.S. Patent 6,287,717.

Cavalca et al. teach a MEA for an electrochemical cell as described in the § 102(b) rejection recited hereinabove. With respect to claim 14, the metallic layer is about 475 angstrom (col. 2, lines 60-68). With respect to claim 15, the metallic layer is only disposed between the membrane and oxygen electrode. See Example 1.

The reference does not expressly disclose: a porous metallic layer (claim 6); pervious to hydrogen ions (claim 7); a semi-continuous metallic layer (claim 5); a metallic layer thickness equal to or greater than about 1 mil (claim 14); or the metallic layer being disposed only between the membrane and hydrogen electrode (claim 15).

However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ a metallic layer thickness greater than or equal to 1 mil (claim 14), since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955).

With respect to claim 15, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the metallic layer only on the hydrogen electrode side of the membrane, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

With respect to claims 6 & 7, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ a porous metallic layer, pervious to hydrogen ions, in order for the electrochemical cell to generate electricity. The skilled artisan recognizes that hydrogen ions must cross the membrane, in order for the cell to function. Since Cavalca teaches a metallic coating on the membrane, it would be obvious to accommodate the passage of hydrogen ions across the membrane, in order to generate electricity.

With respect to the semicontinuous metallic layer of claim 5, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a semicontinuous layer, in order to preserve the cost and amount of metallic materials.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cavalca et al. U.S. Patent 6,287,717 in view of Lisi et al. U.S. Pat. 6,827,747.

Cavalca et al. teach a MEA for an electrochemical cell as described in the § 102(b) rejection recited hereinabove. With respect to claim 17, the gas crossover at the membrane is reduced by equal to or greater than about 30% as compared to the amount of gas crossover at the membrane in the absence of the metallic layer. See Example 1.

Cavalca is silent to: a plurality of MEAs alternatively arranged with a plurality of flow field membranes between first and second separator plates (claims 16 & 19); the metallic layer having a composition and thickness suitable for operating the electrochemical cell at an operating pressure difference across the at least one MEA of equal to or greater than about 50 pounds-per-square-inch (claims 16 & 19); and a porous metallic layer (claims 18 & 21).

Lisi teaches that it is conventional to employ a plurality of MEAs (22, 24) alternatively arranged with a plurality of flow field members (38, 40) between first and second separator plates (32,34). See Figure 1.

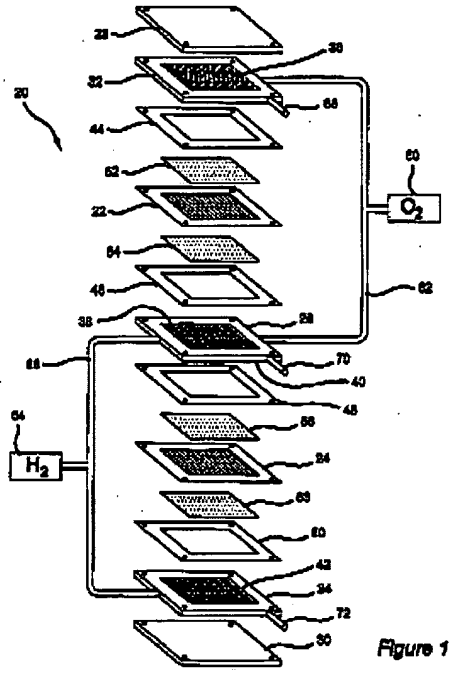

Figure 1

However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the fuel cell stack assembly of Lisi, using the MEAs of Cavalca, in order to fulfill greater load demands (claims 16 & 19). The skilled artisan recognizes that employing multiple MEAs in a stack provides greater electrical output. Additionally, it would have been obvious to one having ordinary skill to employ multiple MEAs in stack configuration, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.

With respect to claims 18 & 21, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ a porous metallic layer, pervious to hydrogen ions, in order for the electrochemical cell to generate

electricity. The skilled artisan recognizes that hydrogen ions must cross the membrane, in order for the cell to function. Since Cavalca teaches a metallic coating on the membrane, it would be obvious to accommodate the passage of hydrogen ions across the membrane, in order to generate electricity.

The limitations with respect to the metallic layer having a composition and thickness suitable for operating the electrochemical cell at an operating pressure difference across the at least one MEA of equal to or greater than about 50 pounds-per-square-inch, are considered characteristics of the prior art set forth, because Cavalca teaches a platinum catalyst coating with the same thickness and composition set forth by Applicant (claims 16 & 19). See Example 1.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov.Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MW

11/26/06

JONATHAN CREPEAU
PRIMARY EXAMINER